



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,698	02/27/2004	Mukul Kumar	VRT0128US	6942
60429 7590 10/16/2007 CAMPBELL STEPHENSON LLP 11401 CENTURY OAKS TERRACE BLDG. H, SUITE 250 AUSTIN, TX 78758			EXAMINER EHNE, CHARLES	
			ART UNIT 2113	PAPER NUMBER
			MAIL DATE 10/16/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/788,698

Applicant(s)

KUMAR ET AL.

Examiner

Charles Ehne

Art Unit

2113

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4,8-14,18-23 and 25-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Deitz (US 6,578,158).

As to claim 1, Deitz discloses a method comprising:

detecting a failure of a first virtualization device of a storage area network interconnect (Figure 2.105, column 7, lines 35-38)

wherein said first virtualization device is associated with a unique interconnect device identifier (column 5, lines 58-61); and

associating said unique interconnect device identifier with a second virtualization device of said storage area network interconnect in response to said detecting (column 7, lines 44-48).

As to claim 2, Deitz discloses the method of claim 1 wherein

said storage area network interconnect is coupled to an application host and to a storage device (Figure 1.110 & 130, columns 4-5, lines 60-5),

said first virtualization device is configured to present a virtual storage element to said application host using a host device identifier (column 6, lines 26-34), and

said virtual storage element comprises at least a portion of said storage device (column 6, lines 30-34).

As to claim 3, Deitz discloses the method of claim 2 wherein said second virtualization device is configured to present said virtual storage element to said application host using said host device identifier in response to said associating (column 7, lines 59-64).

As to claim 4, Deitz discloses the method of claim 3 wherein said detecting comprises:

monitoring a communications link for a heartbeat signal from said first virtualization device (column 7, lines 35-38).

As to claim 8, Deitz discloses the method of claim 3 wherein said unique interconnect device identifier comprises a Fibre Channel device identifier (column 5, lines 61-67).

As to claim 9, Deitz discloses the method of claim 3 wherein said unique interconnect device identifier comprises at least one of a world wide node name and a world wide port name (columns 5-6, lines 61-3).

As to claim 10, Deitz discloses the method of claim 3 wherein

said first virtualization device comprises a first virtualization switch (column 6, lines 19-26), and

said second virtualization device comprises a second virtualization switch (column 6, lines 19-26).

As to claim 11, Deitz discloses a machine-readable medium having a plurality of instructions executable by a machine embodied therein, wherein said plurality of instructions when executed cause said machine to perform a method comprising:

detecting a failure of a first virtualization device of a storage area network interconnect (Figure 2.105, column 7, lines 35-38),

wherein said first virtualization device is associated with a unique interconnect device identifier (column 5, lines 58-61);

associating said unique interconnect device identifier with a second virtualization device of said storage area network interconnect in response to said detecting (column 7, lines 44-48).

As to claim 12, Deitz discloses the machine-readable medium of claim 11 wherein

said storage area network interconnect is coupled to an application host and to a storage device (Figure 1.110 & 130, columns 4-5, lines 60-5),

said first virtualization device is configured to present a virtual storage element to said application host using a host device identifier (column 6, lines 26-34), and

said virtual storage element comprises at least a portion of said storage device (column 6, lines 30-34).

As to claim 13, Deitz discloses the machine-readable medium of claim 12 wherein

said second virtualization device is configured to present said virtual storage element to said application host using said host device identifier in response to said associating (column 7, lines 59-64).

As to claim 14, Deitz discloses the machine-readable medium of claim 13 wherein said detecting comprises:

monitoring a communications link for a heartbeat signal from said first virtualization device (column 7, lines 35-38).

As to claim 18, Deitz discloses the machine-readable medium of claim 13 wherein said unique interconnect device identifier comprises a Fibre Channel device identifier (column 5, lines 61-67).

As to claim 19, Deitz discloses the machine-readable medium of claim 13 wherein said unique interconnect device identifier comprises at least one of a world wide node name and a world wide port name (columns 5-6, lines 61-3).

As to claim 20, Deitz discloses the machine-readable medium of claim 13 wherein

said first virtualization device comprises a first virtualization switch (column 6, lines 19-26), and

said second virtualization device comprises a second virtualization switch. (column 6, lines 19-26)

As to claim 21, Deitz discloses a data processing system comprising:

means for detecting a failure of a first virtualization device of a storage area network interconnect (Figure 2.105, column 7, lines 35-38), wherein

said first virtualization device is associated with a unique interconnect device identifier (column 5, lines 58-61),

said storage area network interconnect is coupled to an application host and to a storage device (Figure 1.110 & 130, columns 4-5, lines 60-5),

said first virtualization device is configured to present a virtual storage element to said application host using a host device identifier (column 6, lines 26-34), and

said virtual storage element comprises at least a portion of said storage device (column 6, lines 30-34); and

means for associating said unique interconnect device identifier with a second virtualization device of said storage area network interconnect coupled to said means for detecting (column 7, lines 44-48).

As to claim 22, Deitz discloses the data processing system of claim 21 wherein said second virtualization device is configured to present said virtual storage element to said application host using said host device identifier in response to said associating (column 7, lines 59-64).

As to claim 23, Deitz discloses the data processing system of claim 22 wherein said means for detecting comprises:

means for monitoring a communications link for a heartbeat signal from said first virtualization device (column 7, lines 35-38).

As to claim 25, Deitz discloses the data processing system of claim 22 wherein said unique interconnect device identifier comprises a Fibre Channel device identifier (column 5, lines 61-67).

As to claim 26, Deitz discloses the data processing system of claim 22 wherein said unique interconnect device identifier comprises at least one of a world wide node name and a world wide port name (columns 5-6, lines 61-3).

As to claim 27, Deitz discloses the data processing system of claim 22 wherein said first virtualization device comprises a first virtualization switch (column 6, lines 19-26), and

said second virtualization device comprises a second virtualization switch (column 6, lines 19-26).

As to claim 28, Deitz discloses a data processing system comprising:
a monitor module to monitor a communications link for a heartbeat signal from a first virtualization device of a storage area network interconnect (column 7, lines 35-43),
wherein said first virtualization device is associated with a unique interconnect device identifier (column 5, lines 58-61); and

a failover module coupled to said monitor module to detect a failure of said first virtualization device and to associate said unique interconnect device identifier with a second virtualization device of said storage area network interconnect in response to said detecting (column 7, lines 44-48 & lines 59-64).

As to claim 29, Deitz discloses the data processing system of claim 28 wherein

said storage area network interconnect is coupled to an application host and to a storage device (Figure 1.110 & 130, columns 4-5, lines 60-5),

said first virtualization device is configured to present a virtual storage element to said application host using a host device identifier (column 6, lines 26-34), and

said virtual storage element comprises at least a portion of said storage device (column 6, lines 30-34).

As to claim 30, Deitz discloses the data processing system of claim 29 wherein

said second virtualization device is configured to present said virtual storage element to said application host using said host device identifier following a failure of said first virtualization device (column 7, lines 59-64).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

Art Unit: 2113

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 5-7, 15-17 and 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Deitz taken in view of Nemoto (US 7,124,139).

As to claims 5, 15 and 24 Deitz discloses wherein the virtual storage element is configured to maintain metadata associated with said virtual storage element, and said associating comprises modifying said metadata (see claim rejections 1). Deitz fails to disclose wherein the storage area network is further coupled to a metadata host said metadata host is configured to maintain metadata associated with said virtual storage element.

Nemoto discloses a computer system wherein a management server manages faults that occurs in any device or mechanism in the system (Abstract, lines 1-11).

Nemoto does disclose wherein the storage area network interconnect is further coupled to a metadata host (Figure 1.1000, column 4, lines 61-67).

It would have been obvious to one of ordinary skill in this art at the time of invention by applicant to implement Nemoto's method of managing metadata with a metadata host with Deitz's network area storage system. A person of ordinary skill in this art would have been motivated to make the modification because when a fault occurs in the virtualization device it is impossible to identify a particular job that is affected by the fault, Nemoto's metadata host allows for determination of the actual jobs (Nemoto, column 2, lines 8-10 & column 12, lines 49-52).

As to claims 6 and 16, Nemoto discloses wherein

said modifying comprises generating a metadata entry corresponding to said second virtualization device (column 11, lines 13-25), and

said metadata entry comprises said unique interconnect device identifier (column 7, lines 31-36 & column 12, lines 65-67).

As to claims 7 and 17, Nemoto discloses the method further comprising:

storing a volume map at said second virtualization device in response to said detecting (column 10, lines 63-67).

Response to Arguments

Applicant's arguments filed 7/25/2007 have been fully considered but they are not persuasive.

Applicant states on page 9, "There is not shown, taught or suggested that Deitz failure of a virtualization device of a storage area network."

Examiner respectfully disagrees. The storage system 130 is made up of RAID, the RAID is comprised as multiple virtual or logical volumes (column 6, lines 19-20). Each controller acts as the applicants "virtualization device", due to the fact that each logical or virtual volume in the RAID is provided and controlled solely by one of the controllers 105 (column 6, lines 26-28).

Applicant states on page 10, "Data transferring is not analogous to providing virtual storage. Storage virtualization provides virtualization of storage services or devices for the purpose of aggregating, hiding complexity or adding new capabilities to lower level storage resources."

Examiner respectfully disagrees. Each controller acts as the applicants "virtualization device", due to the fact that each logical or virtual volume in the RAID is provided and controlled solely by one of the controllers 105 (column 6, lines 26-28). A host sends a read/write request for a specific LUN or virtual storage location to one of the controllers and in turn the controller performs the request on the specific disk in the RAID which relates to the specific location.

Applicant states on page 11, "in addition, Dietz does not mention, teach, or even suggest a link is configured to transmit storage virtualization is between first virtualization device and second virtualization device"

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Ehne whose telephone number is (571)-272-2471. The examiner can normally be reached on Monday-Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (571)-272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


ROBERT BEAUSOLIEL
SENIOR PATENT EXAMINER
EBC/CENT 2100